S/N Unknown **PATENT**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Makis KASAPIDIS	Examiner: Unknown
Serial No.:	Unknown	Group Art Unit: Unknown
Filed:	Herewith	Docket: 491.046US1
Title:	CELLULAR TELECOMMUNICATIONS NETWORK (Continuation Under 35 U.S.C. 111(a) of PCT/GB00/03804, filed October 4, 2000 (published April 12, 2001 as WO 01/26404 A1)	

PRELIMINARY AMENDMENT

Commissioner for Patents
Washington, D.C. 20231

Prior to examination, please enter the following amendments.

In the Specification

On page 1, at line 3, please insert the following paragraph:

--CROSS-REFERENCE TO RELATED APPLICATIONS

This application is a continuation under 35 U.S.C. 111(a) of PCT/GB00/03804, filed October 4, 2000 and published as WO 01/26404 A1 on April 12, 2001, which claims priority from EP Application No. 19990307888, filed October 6, 1999, both of which applications are incorporated herein by reference.--

On page 1, between lines 3 and 4, please insert the following heading:

--BACKGROUND OF THE INVENTION--.

On page 5, at line 3, please insert the following heading:

--SUMMARY OF THE INVENTION--.

On page 17, at line 18, please insert the following heading:

--BRIEF DESCRIPTION OF THE DRAWINGS--.

On page 18, between lines 16 and 17, please insert the following heading:

--DETAILED DESCRIPTION--.

In the Abstract

Please amend the Abstract as follows. A clean version of the amended Abstract on a separate sheet is attached hereto.

ABSTRACT OF THE DISCLOSURE

Cellular telecommunication network [1 comprises] includes a plurality of base [station 4, 6, 7,] stations, together with a plurality of positioning elements [3, 5]. In order to determine the position of mobile station [2], positioning signals are transmitted from positioning element [3, 5] and can be detected by mobile station [2]. By detecting the time of arrival of the positioning signals, the network [1] can determine the position of mobile station [2].

In the Claims

Please substitute the claim set in the appendix entitled Clean Version of Pending Claims for the previously pending claim set. Specific amendments to individual claims are detailed in the following marked up set of claims.

Please amend claims as follows:

3. (Once Amended) A method as claimed in [either one of the preceding claims] claim 1 wherein said positioning signal is transmitted at a predetermined time relative to the timing of transmissions from a Base station with which the Mobile station is in communication, and said time-of arrival value is also relative to the timing of transmissions from said Base station.

4. (Once Amended) A method as claimed in [any one of the preceding claims] claim 1 wherein said positioning element transmits only intermittently, such that it is in a state of not transmitting any signals for larger average periods of time than it is in a state of transmitting signals.

8. (Once Amended) A positioning element as in [any one of claims 5, 6 or 7] claim 5 powered solely by one or more batteries.

11. (Once Amended) A cellular telecommunications network as claimed in [either one of claims 9 or 10] claim 9 in combination with a mobile station.

12. (Once Amended) A Mobile station for communicating with a Cellular telecommunications network [preferably as claimed in either one of claims 9 or 10] as claimed in claim 9 via an air interface, said Mobile station including:

Base-Station-to-Mobile-Station receiving means for receiving signals from a Base station; and

positioning-element-signal detecting means for detecting a positioning signal transmitted by a positioning element.

16. (Once Amended) A mobile station as claimed in [any one of claims 12-15] claim 12 including means for discriminating between signals from a base station and signals from a positioning element by determining the pattern of repetition of signals and comparing the determined pattern with one or more known patterns of repetition of signals from either [bases] base stations or positioning elements.

17. (Once Amended) The use of a mobile station adapted to be positioned within a cellular telecommunications network in accordance with the method of [any one of claims 1 to 4] claim 1.

Remarks

The above-presented amendments to the specification are made to add priority information and section headings. The claims have been amended to eliminate multiple dependencies. Claims 1-17 are pending in this application.

Respectfully submitted,

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Date of Deposit: June 4, 2001
This paper or fee is being deposited on the date indicated above with the United States Postal Service pursuant to 37 CFR 1.10, and is addressed to the Commissioner for Patents, Box Patent Application, Washington, D.C. 20231.

CLEAN VERSION OF AMENDED ABSTRACT

ABSTRACT OF THE DISCLOSURE

Cellular telecommunication network includes a plurality of base stations, together with a plurality of positioning elements . In order to determine the position of mobile station , positioning signals are transmitted from positioning element and can be detected by mobile station . By detecting the time of arrival of the positioning signals, the network can determine the position of mobile station .

CLEAN VERSION OF THE PENDING CLAIMS

1. A method of positioning a Mobile station within a Cellular telecommunications network which includes a plurality of Base stations and a plurality of positioning elements and in which Mobile stations and Base stations communication with one another over an air interface, said method including:

at least one positioning element transmitting a predetermined positioning signal at a predetermined time;

said Mobile station determining a window of time within which to attempt to detect said positioning signal;

said Mobile station detecting said positioning signal; and

determining a time-of-arrival value dependent on the time of arrival at said Mobile station of said positioning signal.

2. A method as claimed in claim 1 wherein said air interface operates in accordance with a code division multiple access protocol.

3. (Once Amended) A method as claimed in claim 1 wherein said positioning signal is transmitted at a predetermined time relative to the timing of transmissions from a Base station with which the Mobile station is in communication, and said time-of arrival value is also relative to the timing of transmissions from said Base station.

4. (Once Amended) A method as claimed in claim 1 wherein said positioning element transmits only intermittently, such that it is in a state of not transmitting any signals for larger average periods of time than it is in a state of transmitting signals.

5. A positioning element for use in positioning a Mobile station communicating with a Base station forming part of a Cellular telecommunications network, said positioning element comprising:

positioning-element-to-Mobile-Station transmitting means for transmitting positioning

signals capable of being received by said Mobile station; and

timing means for enabling the positioning element to transmit said positioning signals at predictable times with respect to the transmissions of said Base station with which the mobile unit to be positioned is communicating.

6. A positioning element as in claim 5 further comprising:

means for receiving signals from a Base station using the air interface for receiving instructions for on-demand transmission of positioning signals and for receiving reconfiguration orders from the network via the Base station.

7. A positioning element as in claim 6 further comprising means for transmitting signals capable of detection by a base station for acknowledging reconfiguration orders from the network via the base station.

8. (Once Amended) A positioning element as in claim 5 powered solely by one or more batteries.

9. A cellular telecommunications network comprising a plurality of base stations and a plurality of positioning elements, each positioning element being adapted to transmit signals capable of detection by one or more mobile stations and capable of receiving signals transmitted by one or more base stations.

10. A cellular telecommunications network comprising a plurality of base stations and a plurality of positioning elements, each positioning element being adapted to generate signals capable of reception by one or more mobile stations at a predetermined time relative to the transmissions from at least one of said base stations.

11. (Once Amended) A cellular telecommunications network as claimed in claim 9 in combination with a mobile station.

12. (Once Amended) A Mobile station for communicating with a Cellular telecommunications network as claimed in claim 9 via an air interface, said Mobile station including:

Base-Station-to-Mobile-Station receiving means for receiving signals from a Base station; and

positioning-element-signal detecting means for detecting a positioning signal transmitted by a positioning element.

13. A mobile station as in claim 12 wherein said positioning-element-signal detecting means includes window-of-reception determination means for determining a window-of-reception within which a positioning signal is expected to be received.

14. A mobile station as in claim 13 wherein said window-of-reception is predetermined relative to the time of reception at the mobile station of the signals from the serving Base station.

15. A mobile station for communicating with a cellular telecommunications network comprising a plurality of base stations and a plurality of positioning elements,

said mobile station including discriminating means for discriminating between signals transmitted by said base stations and signals transmitted by said positioning elements.

16. (Once Amended) A mobile station as claimed in claim 12 including means for discriminating between signals from a base station and signals from a positioning element by determining the pattern of repetition of signals and comparing the determined pattern with one or more known patterns of repetition of signals from either base stations or positioning elements.

17. (Once Amended) The use of a mobile station adapted to be positioned within a cellular telecommunications network in accordance with the method of claim 1.

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